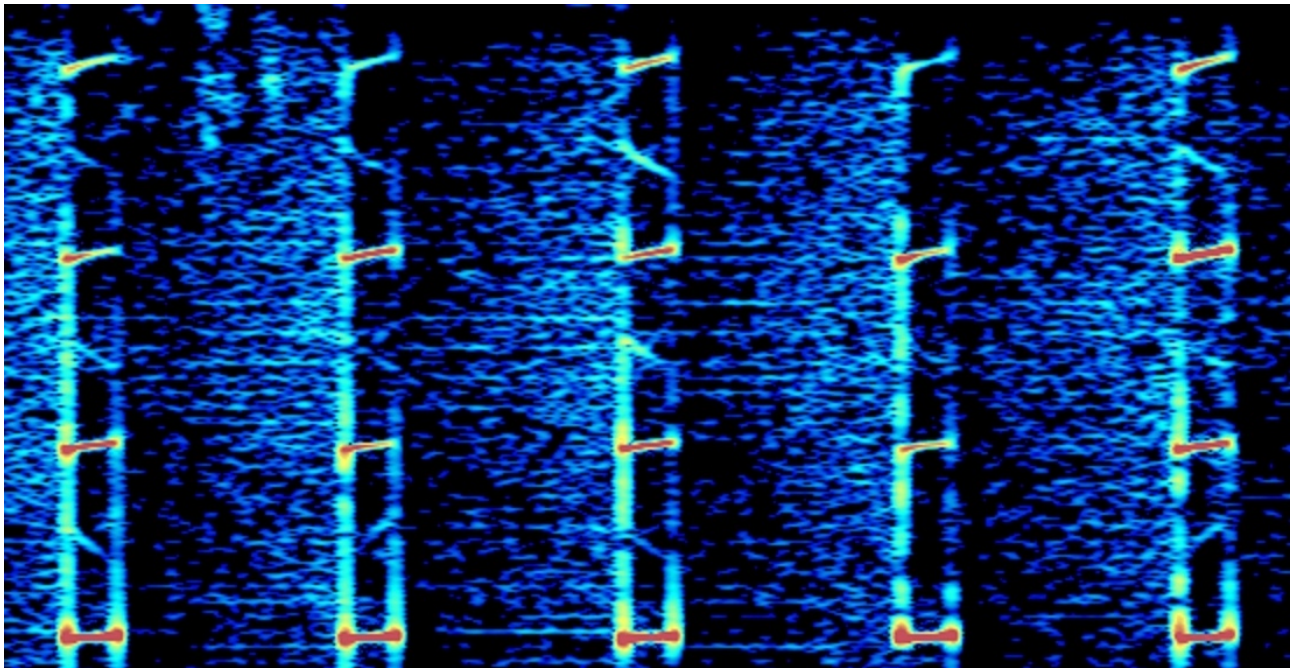
The Pip Dossier

01.02.2012



Above: Pip on the night of 18.12.2011

In this report I will provide some background information on Pip and then present my results and conclusions from over 3 months of monitoring it. At the end of the post I've included some thoughts on it's purpose and information on it's location.

Definition

> S30 OM
> "The Pip" with messages; was XT 3757 night / 5448kHz day, changing over at c18.00z/06.00z +- ?hrs, seasonal dependant. Freqs sometimes run // for a short time.
> Russ Mil.Ch marker, voice & data.
>
> - *Enigma 2000 control list*[1]

Pip is a station that broadcasts a ”beeping” sound times a minute in AM with occasional voice messages on USB. It uses 3756 kHz as it's night frequency and 5448 kHz during the day, changing switchover times seasonally. The station uses call sign 8C1Щ and is believed to be a Russian military station. Due to it's clandestine nature the transmitter location or military branch is not definitively known, but it is suspected that it is located in Rostov-on-Don area and is run by the
In english, the nickname Pip is commonly recognised, Russian shortwave listeners call it Капля (drop), and ENIGMA (The European Numbers Information Gathering & Monitoring Association) has given it a classification S30 despite Pip not being a number station per se.
Note that the Enigma 2000 control list definition is slightly out of date.

Sound sample: ***S30 3756 kHz 0233z 19.12.2011***
http://priyom.org/media/56614/s30-3756usb-2011219-0233z-sample-bytucana.ogg

History

Due to the clandestine nature of these stations not very much is known about it's history or even it's activity for the large part of it's existence.
Some history however can be pieced together from old newsletters and logs and is presented here to the best of my knowledge.

Early days and ENIGMA classification

Pip has been verifiably heard by shortwave listeners in the late 1980's, and some Russian sources say that the station has been active even before this, but up to 1986 it worked without broadcasting a constant sound.[2]
Pip was first featured in the Enigma newsletter in May 1994 but it went without a classification till mid-1998 when it was given the designation XT. When the first voice messages were heard in July 1999 the designation was changed to S30 (Ary Boender, personal communication, 15.01.2012).

Message from 0330z 27.12.1998 by Brian Rogers (website in ”Further reading”-section).
http://brogers.dsl.pipex.com/samples/pip.mp3

```
Лля 854 032 471 331 629 008 Как слышно? Как слышно? Приём!
Dlya 854 032 471 331 629 008 Kak slyshno? Kak slyshno? Priyom!
```

Sound sample of Pip from 22.09.1999 by Ary Boender.
http://priyom.org/media/56611/xt-pip__22-9-1999_.mp3

Message formats

Для (Dlya)

Currently Pip call signs used in Dlya messages are a mix of letters and numbers, 4fg long and 10 are always sent. Historical sources point out that the Dlya message call signs have been 3fg numbers until very recently.

First known message was logged in 24.4.1998 at 2230z (Ary Boender, personal communication, 15.01.2012), content of this message is not known. In 27.12.1998[3] a Dlya message with six 3 number groups was heard. This 6x 3 format continued until 16.11.2002[4] when Pip sent 10x 3-number call signs. It is worth noting that there was a couple year gap without any reports before the 2002 logging so the exact time of the switch from 6 calls to 10 calls is not known. The latest that 10x 3 number message was verifiably received was 3.3.2007 (danix111, personal communication, 30.1.2012).
The first ”modern” Dlya was logged on 22.11.2009[3] and interestingly 6 of the call signs in that message are still in active use and they are used in the exact same order – just with new call signs in the place of the obsolete ones.

22.11.09	ХЦЛФ HCLF	61ХЖ 61HZh	ЗБИЛ ZBIL	НЖФХ NZhFH	ВЬЗЬ V'Z'	НЛЦЕ NLCYe	8Ь4О 8'4O	ОЗЩН OZShchN	2О7Щ 2O7Shch	ПХТ5 PHT5
Current call sign pool	ХЦЛФ HCLF	61ХЖ 61HZh	ЗБИЛ ZBIL	Л7О5 L7O5	ВЬЗЬ V'Z'	НЛЦЕ NLCYe	8Ь4О 8'4O	АУИ8 AUI8	2ЗЩН 2ZShchN	В2М3 V2MZ

Shaded call signs are identical.

8С1Щ (8S1Shch)

The only tactical message call sign logged so far is 8С1Щ, the first logging was in 4.10.2010 and it's use continues to this day. Shortwave listener Jan Michalski reports that he has been monitoring Pip since 1999 and only 3-number Dlya-type messages were heard back then. It is possible that Pip has sent practise/test content throughout most of it's existence and has activated with tactical flash messages only recently, or at the least tactical flash messages have been very rare before 2010. It is worth noting that Pip's sister station the Buzzer (S28) increased it's activity in 2010 so drastically that it was featured in the news internationally.

Other bits and pieces

- There are conflicting reports on how many times the messages were repeated, ranging from 1[5] to 3[6] times.
- Dlya messages have run on a loose schedule for a long time, as shortwave listener Rimantas Pleikys was quoted as saying in 1999[7], ”It seems that 22:10-22:20 UTC is a standard daily message time”. This schedule is not currently observed.
- Pip has been seen on both frequencies during the day/night frequency switch since 1999[6] and the practise is still seen occasionally making it very likely that Pip has always been broadcast with two separate transmitters.
- Since the early days Pip has always used two frequencies, using 3756 kHz for night and 5448 kHz for day[6].

Observations 22.10.2011-31.01.2012

In this section I have collected my personal observations from the time I have been recording Pip. I have examined some of these issues deeper in my old blog posts that can be found in Priyom. Recordings are available by request.

Monitoring statistics

Period	Для (Dlya)	8С1Щ (8S1Shch)	TOTAL	Time monitored
22.10-31.10	10	3	13	126h 30min
01.11-31.11	67	2	69	456h 48min
01.12-31.12	93	15	108	626h 4min
01.01-31.01	85	17	102	744h
TOTAL	**255**	**37**	**292**	**1953h 22min**

Messages

Для (Dlya)

Propagation test messages, common on both day and night frequencies with typically 3 sent in every 24-hour period. Dlya, pronounced as one word, means ”for” and is followed by reading of 10 call signs, each 4 characters long, all read phonetically with numbers usually read as singles. Messages end with a question, Как слышно? (”Kak slyshno?”), asking how well the receiving station hears the message. Presumably the stations called in these messages reply via radio or other technical means to give their reception report. No replies have been discovered so far.
Pip's sister station Squeaky Wheel (S32) also sends Dlya messages while the other sister station the Buzzer (S28) doesn't.

Sample Dlya message: ***S30 3756 kHz 0305z 20.12.2011***
http://priyom.org/media/56617/s30-3756usb-20111220-0305z-msg-bytucana.ogg

```
Для ЙХЬЙ ЗЬ1Б НИ9В ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ
Dlya JH'J Z'1B NI9V DMC3 49FT C2ZA LI27 INNC ShchGJP 8CShchJ
```

Message structure
Block diagram illustrates how messages are read on the air. Bold blocks indicate content that is actually said on the air, normal text indicates varying content. Pause in mid-transmission is marked in red.

Для	10x 4fg	**Для**	10x 4fg	**Как слышно?** **Как слышно?**	**PAUSE** **5-20s**	**Для**	10x 4fg	**Для**	10x 4fg	**Как слышно?** **Как слышно?** **Приём!**

Call signs

Dlya messages are loosely scheduled and the call sign pools are rotated semi-randomly. 82 call signs have been observed in this monitoring period, two of them have only been heard once and they are close to commonly used call signs so it is possible that these have been reading errors

Rare	Common
А3НС (A3NS)	А3ПС (A3PS)
НИ9В (NI9V)	ЦИ9В (CI9V)

All call signs heard, in alphabetical order:

Cyrillic	Latin	Cyrillic	Latin	Cyrillic	Latin	Cyrillic	Latin
ЬМСВ	'MSV	81БР	81BR	ЙХЬЙ	JH'J	ТУ3Р	TUZR
ЬО6П	'O6P	8ЩЩЙ	8CShchJ	ЛЬГЙ	L'GJ	Т3ЛМ	TZLM
ЬУ1Б	'U1B	8МУО	8MUO	Л7О5	L7O5	ВЬ3Ь	V'Z'
ЬУЕ8	'UYe8	9ГСА	9GSA	ЛИ27	LI27	В2М3	V2MZ
12СИ	12CI	А3НС	A3NS	М1СЕ	M1SYe	ВКЫ1	VKY1
27ЩЬ	27Shch'	А3ПС	A3PS	М7КС	M7KS	ВЛДХ	VLDH
2ЗЩН	2ZShchN	АГДТ	AGDT	МУДР	MUDR	ВТХ3	VTH3
37ЦН	37CN	АУИ8	AUI8	Н1ДУ	N1DU	Ы8ВМ	Y8VM
3ВСЬ	3VS'	БО6Ц	BO6C	НИ9В	NI9V	ЫГЙЬ	YGJ'
49ФТ	49FT	Ц2ЗА	C2ZA	НЛЦЕ	NLCYe	ЫМА5	YMA5
4РВЗ	4RVZ	ЦИ9В	CI9V	ОЬНЕ	O'NYe	З Ь1Б	Z'1B
53ОБ	53OB	ЦИХС	CIHS	ОСОГ	OSOG	З6МА	Z6MA
5Й7Щ	5J7Shch	ЦП3Ь	CP3'	ПЬХЩ	P'HShch	З7ПМ	Z7PM
61ХЖ	61HZh	ДКЙ1	DKJ1	ПМВ5	PMV5	ЗБИЛ	ZBIL
62ББ	62BV	ДМЦ3	DMC3	ПЫЦМ	PYCM	Ж1ТР	Zh1TR
6И2Ж	6I2Zh	Ф56Щ	F56Shch	СБ7З	SB7Z	Ж7НЖ	Zh7NZh
6ЕХБ	6YeHB	Ф61Н	F61N	ЩГЙП	ShchGJP	ЖБЗУ	ZhBZU
78МВ	78MV	ФЫ5Е	FY5Ye	ЩТ3О	ShchT3O	ЖД9В	ZhD9V
79АЙ	79AJ	ХЦЛФ	HCLF	СЙ5Ц	SJ5C	ЖСК4	ZhSK4
7ВНЩ	7VNShch	ХДЗ1	HDZ1	ТАЗ7	TAZ7		
8Ь4О	8'4O	ИННЦ	INNC	ТЩЩС	TShchShchS		

Call signs being phased out

Since late December 2011 when sending Dlya messages certain call signs have clearly been left out of the regular circulation. Comparing the messages sent in January 2012 with the complete call sign list it can be concluded that 14 call signs in total have been omitted. It is not known at this time whether they will be replaced by new call signs in the future or whether it is not important to contact these specific recipients temporarily and the call signs reactivate in the future.

Below is an illustration showing the current call sign pool and also illustrated is 3 consecutive Dlya messages which clearly show the rotational pattern in Dlyas as well as jumping over the call signs being phased out.

LEGEND	
Colour	**Meaning**
	Call signs transferred to this system from the previous rotation (first line).
	Call signs, colours are there to illustrate the repetitions in the pools
	Call signs being phased out.

Call sign pools:

ХДЗ1	ЗЬ1Б	27ЩЬ	ЦИ9В	Н1ДУ	53ОБ	78МВ	З6МА	ОЬНЕ	АЗПС
6	7	8	9	10	1	2	3	4	5
27ЩЬ	Н1ДУ	53ОБ	78МВ	АЗПС	ЬМСВ	ЫГЙЬ	12СИ	79АЙ	ПЬХЩ
ЬМСВ	ЫГЙЬ	12СИ	79АЙ	ПЬХЩ	6ЕХБ	ЬУЕ8	ЦПЗЬ	ЩТ3О	ЦИХС
6		7	8	9	10				
6ЕХБ	ЬУЕ8	ЦПЗЬ	ЩТ3О	ЦИХС	Ж1ТР	М1СЕ	З7ПМ	ЬО6П	ЙХЬЙ
Ж1ТР	М1СЕ	З7ПМ	ЬО6П	ЙХЬЙ	ДМЦ3	49ФТ	Ц2ЗА	ЛИ27	ИННЦ
ДМЦ3	49ФТ	Ц2ЗА	ЛИ27	ИННЦ	ЩГЙП	8ЦЩЙ	ТЗЛМ	ФЫ5Е	Ф61Н
ЩГЙП	8ЦЩЙ	ТЗЛМ	ФЫ5Е	Ф61Н	37ЦН	МУДР	7ВНЩ	Ж7НЖ	ЫМА5
37ЦН	МУДР	7ВНЩ	Ж7НЖ	ЫМА5	ВТХ3	АГДТ	ЬУ1Б	ОСОГ	БО6С
ВТХ3	АГДТ	ЬУ1Б	ОСОГ	БО6Ц	Ф56Щ	9ГСА	ЖВЗА	4РВЗ	3ВСЬ
Ф56Щ	9ГСА	ЖБЗУ	4РВЗ	3ВСЬ	ДКЙ1	6И2Ж	ЖД9В	СЙ5Ц	62ББ
ДКЙ1	6И2Ж	ЖД9В	СЙ5Ц	62ББ	81БР	М7КС	ПМВ5	ЛЬГЙ	ТЩЩС
81БР	М7КС	ПМВ5	ЛЬГЙ	ТЩЩС	ВКЫ1	ХЦЛФ	61ХЖ	ЗБИЛ	Л7О5
1	2	3	4	5	6	7			
ВКЫ1	ХЦЛФ	61ХЖ	ЗБИЛ	Л7О5	ВЬЗЬ	НЛЦЕ	8Ь4О	АУИ8	2ЗЩН
ВЬЗЬ	НЛЦЕ	8Ь4О	АУИ8	2ЗЩН	В2МЗ	ЖСК4	СБ7З	ТАЗ7	ПЫЦМ
8		9	10	1	2	3	4	5	
В2МЗ	ЖСК4	СБ7З	ТАЗ7	ПЫЦМ	Ы8ВМ	8МУО	ТУЗР	5Й7Щ	ВЛДХ
Ы8ВМ	8МУО	ТУЗР	5Й7Щ	ВЛДХ	27ЩЬ	Н1ДУ	53ОБ	78МВ	АЗПС

S30 3756 kHz 1732z 28.01.2012

http://priyom.org/media/56743/s30-3756usb-20120128-1732z-msg-bytucana.ogg

```
Для ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З ТАЗ7
Dlya VKY1 HCLF 61HZh ZBIL L7O5 V'Z' NLCYe V2MZ SB7Z TAZ7
```

S30 3756 kHz 0417z 29.01.2012

http://priyom.org/media/56746/s30-3756usb-20120129-0417z-msg-bytucana.ogg

```
Для ПЫЦМ Ы8ВМ 8МУО ТУЗР 5Й7Щ 27ЩЬ Н1ДУ 53ОБ 78МВ АЗПС
Dlya PYCM Y8VM 8MUO TUZR 5J7Shch 27Shch' N1DU 53OB 78MV A3PS
```

S30 3756 kHz 0656z 29.01.2012

http://priyom.org/media/56749/s30-5448usb-20120129-0656z-msg-bytucana.ogg

```
Для ЬМСВ ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦПЗЬ ЩТ3О ЦИХС Ж1ТР
Dlya 'MSV YGJ' 12CI 79AJ P'HShch 6YeHB CP3' ShchT3O CIHS Zh1TR
```

8С1Щ (8S1Shch)

General circular announcements sent at random times, more common on the daytime frequency. Call sign is read phonetically, numbers are read as tens. 8С1Щ is the only known call sign used by Pip. Pip's sister station Squeaky Wheel (S32) sends a tactical flash message with a call sign Альфа 45 (Al'fa 45) few minutes after Pip, a connection that is well-established with many observed instances. Buzzer (S28) has been observed sending messages at the same time as Pip and Squeaky Wheel during occasions of very high broadcast volume observed over periods ranging between 15 minutes and one hour in lenght on separate days. At the same time, flash messages are given in Morse code around the same retrospective frequencies.

Sample 8S1Shch message: ***S30 3756 kHz 0313z 22.01.2012***
http://priyom.org/media/56620/s30-3756usb-20120122-0313z-msg-bytucana.ogg

```
8С1Щ 73 373 ВДЕВАНИЕ 84 56 22 35
8S1Shch 73 373 VDYeVANIE 84 56 22 35
```

Message structure

Block diagram illustrates how messages are read on the air. Bold blocks indicate content that is actually said on the air, normal text indicates varying content. Pause in mid-transmission is marked in red.

8С1Щ **8С1Щ**	2fg 3fg	CODEWORD (pronoun- ced)	2fg 2fg 2fg 2fg	2fg 3fg	CODEWORD (phonetic)	2fg 2fg 2fg 2fg	**PAUSE** **5-20s**	**8С1Щ** **8С1Щ**	2fg 3fg	CODEWORD (pronoun- ced)	2fg 2fg 2fg 2fg	2fg 3fg	CODEWORD (phonetic)	2fg 2fg 2fg 2fg	**Приём!**

Randomness of 8S1Shch messages

I have analyzed 8S1Shch messages closely to see if they really are random, below I'll elaborate on the aspects that I've researched.

- Message contents do not correlate with the date or time when the message was sent.
- There haven't been any repeated messages and codewords haven't been used more than once.
- Messages sent in the same day do not have any similarities.
- The leading 2fg group that begins the message is sometimes repeated but the 3fg group following that has been unique so far. In cases where the leading 2fg is repeated there are no other similarities in the messages.
- 2fg groups spread out fairly evenly in a normal distribution graph, suggesting that the numbers are selected randomly. Many 2fg groups are featured in multiple messages, occasionally in the same position, but no more than 2 identical groups have been seen in one message.

Below are 3 messages that have the most in common with each other. They share two 2fg groups and at most only one of them is at the same position. Leading numbers don't match and neither does anything else in the message. All numbers except 55 and 91 have also been repeated on other 8S1Shch messages not shown here.

Date	Time	2fg	3fg	Codeword	2fg	2fg	2fg	2fg
07.12.11	1423z	41	914	АНТРОИНАЯ ANTROINAYA	22	91	49	18
26.12.11	0720z	70	294	ВЕРТОГРАД VYeRTOGRAD	18	23	91	91
02.01.12	1400z	22	659	СОЧЕДЬНИЦА SOChYeD'NICA	55	49	91	34

It can be concluded that the 8S1Shch messages are constructed in a sufficiently random manner to defeat any casual analysis.

8S1Shch with two codewords

On 27.01.12 at 0500z a message with two codewords was received for the first time. This is not only unique to my own monitoring but based on historical information there are no known messages with this format.

S30 5448 kHz 0500z 27.01.2012
http://priyom.org/media/56752/s30-5448usb-20120127-0500z-msg-bytucana.ogg

```
8С1Щ 63 007 ГАЛАДЬЯ 68 43 83 69 МОТОВАГОН 49 44 39 45
8C1Shch 63 007 GALAD'Ya 68 43 83 69 MOTOVAGON 49 44 39 45
```

Pip – Squeaky Wheel connection

Pip's sister station Squeaky Wheel (S32) has continued to send messages with Альфа 45 (Al'fa 45) call sign a few minutes after Pip has sent a 8С1Щ (8S1Shch) message. This activity has been observed since at least September 2011 and has most likely been going on for a long time and has gone unnoticed due to hobbyists not monitoring both stations simultaneously. It is worth mentioning that the Squeaky Wheel also sends Al'fa 45 messages individually so it does not only function as a relay station for Pip.

List of transmissions:

Station	Date	Time	Call sign	2fg	3fg	Codeword	2fg	2fg	2fg	2fg
S30	09.09.11	1645z	8С1Щ 8S1Shch	59	132	ПОДСТРУЖКА PODSTRUZhKA	77	36	36	63
S32	09.09.11	1656z	Альфа 45 Al'fa 45	??	??2	БАЖАНОВЕЦ BAZhANOVYeC	93	06	92	77
S30	12.09.11	1616z	8С1Щ 8S1Shch	31	856	ГРАНАТОИД GRANATOID	22	85	77	32
S32	12.09.11	1620z	Альфа 45 Al'fa 45	78	378	МАДРИГАЛ MADRIGAL	20	82	93	13
S30	22.09.11	1651z	8С1Щ 8S1Shch	10	668	ДРУЖБА DRUZhBA	91	18	27	87
S32	22.09.11	1655z	Альфа 45 Al'fa 45	52	164	УАБАИН UABAIN	53	61	86	88
S30	10.10.11	1501z	8С1Щ 8S1Shch	61	526	ЛЕЙКОЦИТОЗ LyeJKOCITOZ	28	36	46	70
S32	10.10.11	1505z	Альфа 45 Al'fa 45	45	503	ПОМОЛОВЫЙ POMOLOVYJ	28	36	06	70
S30	10.10.11	1659z	8С1Щ 8S1Shch	19	246	МОНТРЕЛ MONTRYeL	30	57	30	28

S32	10.10.11	1703z	Альфа 45 Al'fa 45	95	360	ВОЛНОВО VOLNOVO	51	77	47	49
S30	07.12.11	1423z	8С1Щ 8S1Shch	41	914	АНТРОИНАЯ ANTROINAYA	22	91	49	18
S32	07.12.11	1426z	Альфа 45 Al'fa 45	27	348	ОСТРЫЙ OSTRYJ	13	00	33	19
S30	07.12.11	1433z	8С1Щ 8S1Shch	58	725	СИКСТЕТ SIKSTET	97	71	01	16
S32	07.12.11	1437z	Альфа 45 Al'fa 45	43	384	АСТРОЛЫАБИЫА ASTROLYABIYA	32	26	56	43
S30	02.01.12	1333z	8С1Щ 8S1Shch	74	304	ГАСУРАНА GASURANA	02	88	87	02
S32	02.01.12	1338z	Альфа 45 Al'fa 45	25	670	КРИЧТОНИТ KRIChTONIT	45	13	27	86
S30	02.01.12	1400z	8С1Щ 8S1Shch	22	659	СОЧЕДЬНИЦА SOChYeD'NICA	55	49	91	34
S32	02.01.12	1404z	Альфа 45 Al'fa 45	04	601	ИРИСКА IRISKA	87	60	16	28
S30	26.01.12	1315z	8С1Щ 8S1Shch	??	?45	МОРЕУЗ MORYeUZ	36	87	29	85
S32	26.01.12	1316z	Альфа 45 Al'fa 45	05	088	ИПОКРИТ IPOKRIT	69	19	05	60
S30	26.01.12	1354z	8С1Щ 8S1Shch	70	465	ОТДЕЛОЧНИК OTDYeLOChNIK	57	76	62	41
S32	26.01.12	1358z	Альфа 45 Al'fa 45	41	644	ВПЛЫТИЕ VPLYTIYe	68	74	47	11

S32 recordings and transcriptions by Avare and Gwraspe

And as final proof, a Squeaky Wheel message with Pip clearly audible in the background:

S32 3828 kHz 1410z 05.01.2012
http://priyom.org/media/56605/s32-3828usb-20120105-1410z-msg-byavare.mp3

```
Альфа 45 10 400 ТРИПЛИТ 65 93 37 42
Al'fa 45  10 400 TRIPLIT 65 93 37 42
```

Other military stations on Pip frequency

Morse transmissions

Morse transmissions have been observed on the Pip night frequency with different stations making contact to RJC66 – a call sign that is attributed to the CIS Navy headquarters[8]. Both the contacting stations and RJC66 are using different transmitter than Pip judging by the signal strenght. The CIS Navy using Pip's frequency might suggest that Pip is somehow involved with naval operations.

Morse transcription from 3756 kHz, 26.01.2012 at 1337z-1352z. Data transmission on the frequency interfered with the contact and might be the reason why the message was sent again. For more comprehensive explanation of Morse traffic please refer to my December post.

```
RJC66 RJC66 RJC66 DE RGZ52 RGZ52 QSA? QTC K
RJC66 RJC66 RJC66 DE RGZ52 RGZ52 QSA? QTC K
RGZ52 947 19 26 1730 947 = SML FOR RJC66 = 11111 23591 OK AS2 K

Message is sent here for the first time but data transmission makes decoding
impossible.

RJC66 DE RGZ52 K
RGZ52 RPT 11111 23591 42287 17647 3762T 78429 42994 425TT 52635 T2747 17631
27445 76T94 19544 2T87T 5T818 26T16 = AR RGZ52 RGZ52 OK QRU K
```

Explanation of the message preamble:

Content	Meaning
RGZ52	Sender of the message
947	Message number
19	Group count (17 groups + 2 procedure groups)
26	Day
1730	Time of message preparation (UTC+4). In this case message was sent approximately 7 minutes after preparation.
SML	Urgency level of the message. SML is abbreviation from Самолет (aircraft), lowest urgency level above normal that is commonly used.
FOR	Email me at tucana@priyom.org if you know what this means
RJC66	Recipient's call sign

CIS-36-50 A.K.A. BEE

This Russian digital mode has been seen on a couple of occasions on 3756 kHz interfering with Pip and even transmitting over a voice message. Unfortunately the bandwidth of this mode is too wide so decode could not be attempted.
This datamode has been frequently seen on CIS single-letter beacon frequencies and they share the same sync string as the Russian VLF transmissions[9] making it unquestionably military nature and with strong connections to the Navy[10] in particular.

Other notes

Multicasting

Pip regularly multicasts around the time of the frequency change and both transmitters are run from the same input as voice messages at these times have been seen on both frequencies at the same time. Multicasts can last up to 50 minutes and were especially prevalent in November 2011.

Seasonal schedule

Historically Pip has followed a seasonal schedule, changing the ratio of the day/night frequency broadcast lenghts. Schedules available on the Internet are obsolete but two seasonal schedules have been uncovered.
Steady 1430-0330 nighttime schedule was observed in October 9 days during the beginning of the monitoring period. On the 1st of November the night frequency ran 1 hour longer and started 1½ hours earlier than in October and this schedule has stood all winter.

Season	3756 kHz	5448 kHz
Fall	1430z - 0330z	0330z - 1430z
Winter	1300z - 0430z	0430z - 1300z

Pip's sound generator

30.12.2011 a Pip sound generator failure was recorded. Judging by the sound it seems likely that the Pip sound doesn't come from a digital device but from an analog source, either from a tape player or an actual device that makes such a sound. After a voice message the Pip device always starts at a same point, in the middle of a ”pip” sound which would suggest that it is restarted and the device or recording always ”boots up” from that specific place.

In 1999[11] it was reported that the speed was 63 pips/min while the current speed is 50 pips/min. It is very unlikely that the sound itself carries any importance and it is possible that the sound generator was replaced or the speed was readjusted for some reason, perhaps during maintenance.

Pip failure: ***S30 3756 kHz 1404z 30.12.2011***
http://priyom.org/media/56775/s30-3756usb-20111230-1404z-odd-bytucana.ogg

Pip's purpose

Researching Pip's purpose is largely beyond the scope of this report as I am trying to concentrate on the station's activity. To understand the environment that Pip operates in I will present the information most commonly circulated on the Internet.

Russian radio hobbyist sources have a strong opinion that Pip is a part of 800th radio network and it's official call sign is Колос (Colossus)[12]. Supposedly Pip's sister stations the Buzzer (S28) and Squeaky Wheel (S32) work in a similar capacity, sharing the radio network number range 800-899 with Pip[13].
Pip disseminates general circular announcements (Оповещение) to the Southern Military District and these messages are received by the regional military recruitment centers (военкоматы). It's been thought that since content is sent in unencrypted voice in an AM-compatible modulation the recipients hold lower rank in the military hierarchy than stations that receive information using Morse code or digital modes, requiring qualified operators (Jan Michalski, personal communication, 15-17.01.2012).

Pip's location

Pip, like all military stations, is kept clandestine by it's operators for obvious reasons. Where there are secrets there is speculation and it is difficult to find where the truth lies and what sources can be trusted. I will present two cases here and let you decide who is correct.

1. **The International Telecommunications Union (ITU)** – A specialized agency of the United Nations tasked to monitor and regulate the radio-frequency spectrum internationally.
2. **WikiMapia** - A website founded in 2006 where everyone is free to register and edit or create new places on a map overlay. The transmitter site was found on WikiMapia and posted on *Radioscanner.ru*, a Russian radio enthusiast forum where another user who claims to have worked at Pip in an official capacity confirmed this information and gave coordinates for the separate receiving station.

ITU's radio division ITU-R was founded in 1927 and has an extensive network of monitoring stations all over the world and on face value it might seem more trustworthy than an anonymous edit on an online map service.
But ITU is not without it's faults – it has placed E10 (a number station from Israel) to various countries based on the call signs it has used and similar blunders have happened with other stations of military/government nature. Possible explanations are outright laziness and assumptions made from listening to the content without doing actual measurements, or there might be outright disinformation given by the monitoring stations loyal to the government that they are reporting on.

On the other hand the edit on WikiMapia is anonymous and the user in *Radioscanner.ru* forums claiming to have worked at Pip did not reply to my enquiries. There can be many reasons why the interview did not work out but I decided to include this fact in the interest of full disclosure.

What can be said for certain is that both coordinates given on Radioscanner actually lead to radio installations while ITU coordinates take us to an empty field.

International Telecommunications Union (ITU)

ITU publishes quarterly reports containing logs from their various monitoring stations[14]. I've searched ITU monitoring reports from 1997 to this day and found 79 mentions of 3756 and 5448 kHz. Almost all of them refer to Russian or Ukrainian activity of some kind, with 12 reports of ”THE 'PIPS'” or ”PIP” and 13 mentions of 50 baud data activity – possibly relating to CIS 36-50. First definite mention of Pip comes in 24.11.2005 at 2107z from ”Baldock” station in the UK. They had monitored the night frequency and written in the identification section ”THE 'PIPS'” which leaves little question to the identity of the station. This log entry contains bearings and most interestingly also rough coordinates are provided.

Coordinates

Coordinates from 24.11.2005 as reported by ITU Baldock monitoring station are: 48°33'N 30°17'E. The coordinates point to Черкаська область (Cherkas'ka oblast) in Ukraine, between Текуча (Tekucha) and Ладижинка (Ladyzhynka), villages of 1000-2000 people. It should be noted that the coordinates are not very specific, at 50° of latitude one minute of latitude is 1,85 km and one minute of longitude 1,19 km, giving an area of 2,18 km. This is the inaccuracy that comes from the coordinates alone, without details of the triangulation process it is impossible to say how much inaccuracy it adds, but in any case the error is very considerable.

Map of the general area

http://toolserver.org/~geohack/geohack.php?params=48_33__N_30_17__E

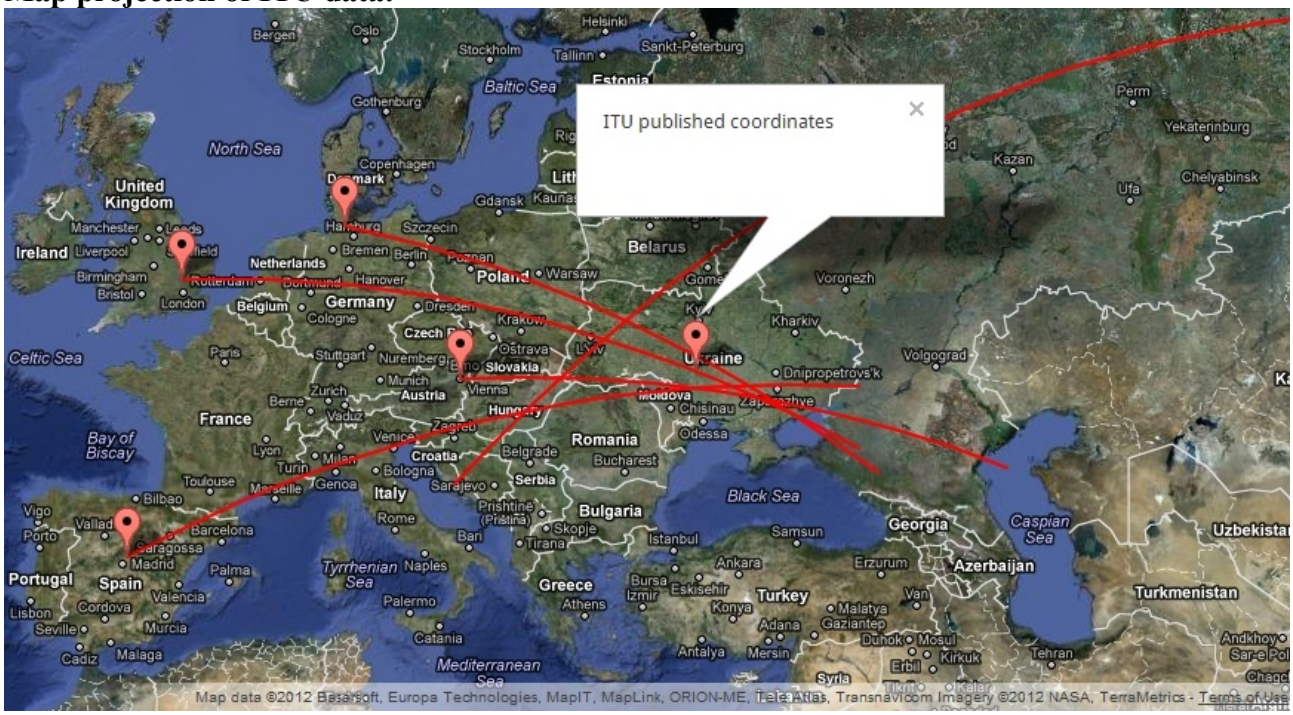
Bearings

Pip has been monitored by ITU on multiple instances after this, however it seems that they have just reused the same coordinates. No coordinates have been given for 5448 kHz. Five ITU stations have logged both the day and night frequencies with bearings and I've created a triangulation map from loggings that are very likely from Pip. These logs span nearly 8 years but from all information I've gathered it seems likely that Pip hasn't moved very recently.

Some stations have taken bearings multiple times, in these cases I've used the bearing of the highest accuracy classification. Both day and night frequency bearings are included in this map.

Date	Station	Frequency	Bearing	Accuracy classification
19.11.2001	Tokyo	5448	323	B
23.12.2004	El Casar	5448	62	A
30.01.2007	Itzehoe	3756	102	-
26.09.2007	Baldock	3756	88	B
23.04.2009	Wien	3756	87	B

Map projection of ITU data:



Interactive map: http://priyom.org/number-stations/slavic/s30/pip-triangulation.aspx

I approached ITU with an email requesting more information about the way they came to conclude that Pip in within these coordinates. Unfortunately the reply was a suggestion to order one of their publications at a cost of hundreds of euros, so at this time I will settle for reporting the coordinates and publishing the triangulation map.

WikiMapia and Radioscanner.ru

Radioscanner.ru is a Russian radio enthusiast forum and hosts many interesting discussions about stations of military nature. Pip has been discussed for years and the forum has produced multiple different coordinates for the transmitter site as well as transmitter specifications that have circulated around the Internet.
Newest posts quote the location of the transmitter site to be in Rostov-on-Don (47°17'58”N 39°40'26”E)[15]. The transmitter site coordinates originate from WikiMapia, but the Radioscanner poster does not know who has entered them on the map service. User ”rw6hrm” confirms the location information and adds that a separate receiving station is located in 47°19'37”N 39°45'12”E[16].

I calculated the distance between these locations to be approximately 6,74 kilometers. A quick look at the street map shows that the transmitting site is located in ”улица зрелищная” (Spectacular street) and receiving site at ”1-я Героическая улица” (1st Heroic street) and the postal code for both is 344000. With closer research the street numbers can be found and this can expand new avenues for the researcher.

Maps
Please note that the satellite imagery used in maps below is from 2009 as it provides the best contrast for viewing the antenna installations. The receiver site map is at an angle (ie. north is not up) to fit more of the installation in the high-resolution image. A link for map services for these coordinates can be found below the images.

Transmitter site (47°17'58”N 39°40'26”E)

http://toolserver.org/~geohack/geohack.php?params=47_17_58_N_39_40_26_E

Receiver site (47°19'37”N 39°45'12”E)

http://toolserver.org/~geohack/geohack.php?params=47_19_37_N_39_45_12_E

General map


Receiver
Transmitter
Image © 2012 GeoEye
Image © 2012 DigitalGlobe
Google

Other

Personal notes

Solar storms have been prominent in January and all kinds of propagational quirks have affected my reception of Pip through these few months, so without question I have missed some messages and I would like to say a few words here to tell you about the reception quality in general.
Daytime frequency is constantly interfered with the RAF VOLMET which has posed the biggest problem and on average I've been able to copy about 70% of the daytime transmission. Nighttime transmissions happen in 80-meter amateur radio band, but the interference is only sporadic so I estimate that I have been able to copy over 95% of the total nighttime broadcast. Since Pip spends more time on the night frequency the total coverage has been satisfactory for this research.

This report concludes my research on Pip, at least for now. I feel like I have been able to explain and demystify the station to a reasonable extent and I hope that you've enjoyed reading my reports. I have had help from many people while writing this post and they deserve proper recognition. Thanks go to Ary Boender, Avare, danix111, Gwraspe, Jan Michalski, T!, TROJAN719 and Webweasel!

Copyright notes

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Further reading

- Priyom.org, ”S30”, http://priyom.org/number-stations/slavic/s30.aspx.
- danix111's SWL, "Pip study page", http://danix111.cba.pl/ns/pip.html.
- Mystery Signals of the Short Wave, "The Pip - S30 (formerly XT)", http://www.brogers.dsl.pipex.com/page7.html.
- Radioscanner.ru, "Радиосети ЦБУ", http://www.radioscanner.ru/forum/topic42766.html.
- Radioscanner.ru, "Частота передачи 3.7560 МГц", http://www.radioscanner.ru/base/freq5369.html
- WAVECOM Online Help 8.0, "CIS-36-50", http://www.wavecom.ch/onlinehelp/WCODE/default.htm#!worddocuments/cis3650.htm.
- Fascinating Shortwaves, http://www.astrosol.ch/index.html.

References

1. ENIGMA 2000, "ENIGMA Control List", http://www.brogers.dsl.pipex.com/enigma2000/docs/ECL.pdf (accessed January 29, 2012).
2. Radioscanner.ru, "Заговорила пикалка на 3756 кГц", http://www.radioscanner.ru/forum/topic23969.html#msg184103 (accessed January 29, 2012).
3. danix111, "danix111's SWL - Pip study page", http://danix111.cba.pl/ns/pip.html (accessed January 29, 2012).
4. Ary Boender, "Numbers & Oddities", no. 55 (2002).
5. Ary Boender, "Numbers & Oddities", no. 16 (1999).
6. Ary Boender, "Numbers & Oddities", no. 10 (1999).
7. Ary Boender, "Numbers & Oddities", no. 17 (1999).
8. Fritz Nusser, "Fascinating Shortwaves - Call Signs in Morse Code Networks", http://www.astrosol.ch/networksofthecisforces/navymorsenetworks/5379039b980e47704/index.html (accessed January 29, 2012).
9. Fritz Nusser, "Fascinating Shortwaves - Channel Markers and Cluster Beacons", http://www.astrosol.ch/networksofthecisforces/navymorsenetworks/beaconsandclusterbeacons/ (accessed January 29, 2012).
10. Roland Proesch, Technical Handbook for Radio Monitoring HF (Books on Demand Gmbh, 2009), 159.
11. Ary Boender, "Numbers & Oddities", no. 13 (1999).
12. Radioscanner.ru, "Частота передачи 3.7560 МГц", http://www.radioscanner.ru/base/freq5369.html (accessed January 29, 2012).
13. Radioscanner.ru, "Радиосети ЦБУ", http://www.radioscanner.ru/forum/topic42766.html#msg729857 (accessed January 29, 2012).
14. International Telecommunications Union, "International monitoring", http://www.itu.int/ITU-R/index.asp?category=terrestrial&rlink=terrestrial-monitoring&lang=en (accessed January 29, 2012).
15. Radioscanner.ru, "Заговорила пикалка на 3756 кГц", http://www.radioscanner.ru/forum/topic23969-3.html#msg830120 (accessed January 29, 2012).
16. Radioscanner.ru, "Заговорила пикалка на 3756 кГц", http://www.radioscanner.ru/forum/topic23969-3.html#msg830232 (accessed January 29, 2012).

Logs – January 2012

8С1Щ (8S1Shch)

Frequency	Date	Time	Message (Cyrillic/Latin)
3756	02.01.12	1333z	8С1Щ 74 304 ГАСУРАНА 02 88 87 02 8S1Shch 74 304 GASURANA 02 88 87 02
3756	02.01.12	1400z	8С1Щ 22 659 СОЧЕДЬНИЦА 55 49 91 34 8S1Shch 22 659 SOChYeD'NICA 55 49 91 34
5448	04.01.12	1249z	8С1Щ 76 815 СТЫДЛИВЕЦ 40 43 27 89 8S1Shch 76 815 STYDLIVEC 40 43 27 89
3756	05.01.12	1407z	8С1Щ 38 050 СТРУКТУРА 64 95 80 04 8S1Shch 38 050 STRUKTURA 64 95 80 04
5448	09.01.12	0710z	8С1Щ 68 669 АВТОСЦЕПКА 43 21 81 19 8S1Shch 68 669 AVTOSCEPKA 43 21 81 19
5448	12.01.12	0832z	Unreadable
5448	15.01.12	1240z	Unreadable
5448	19.01.12	0601z	8С1Щ 21 681 ПЕРЕКАТКА 34 16 05 28 8S1Shch 21 681 PEREKATKA 34 16 05 28
3756	20.01.12	1741z	8С1Щ 05 937 КАВАРДАК 73 94 52 03 8S1Shch 05 937 KAVARDAK 73 94 52 03
3756	22.01.12	0313z	8С1Щ 73 373 ВДЕВАНИЕ 84 56 22 35 8S1Shch 73 373 VDYeVANIE 84 56 22 35
5448	25.01.12	0601z	8С1Щ 39 711 ГЛИЗАНТИН 26 27 33 93 8S1Shch 39 711 GLIZANTIN 26 27 33 93
3756	25.01.12	1509z	8С1Щ 77 947 БЕЛАНДЕ 88 42 01 50 8S1Shch 77 947 BELANDE 88 42 01 50
5448	26.01.12	0603z	8С1Щ 49 899 ОКРУЖКАН 28 84 31 57 8S1Shch 49 899 OKRUZhAN 28 84 31 57
3756	26.01.12	1315z	8С1Щ ?? ?45 МОРЕУЗ 36 87 29 85 8S1Shch ?? ?45 MORYeUZ 36 87 29 85
3756	26.01.12	1354z	8С1Щ 70 465 ОТДЕЛОЧНИК 57 76 62 41 8S1Shch 70 465 OTDYeLOChNIK 57 76 62 41

5448	27.01.12	0500z	8С1Щ 63 007 ГАЛАДЬЯ 68 43 83 69 МОТОВАГОН 49 44 39 45 8S1Shch 63 007 GALAD'Ya 68 43 83 69 MOTOVAGON 49 44 39 45
5448	30.01.12	1250z	Unreadable

Для (Dlya)

Date	**Time**	**Frequency**	**Message (Cyrillic/Latin)**
01.01.12	0734z	5448	Для ЦИХС Ж1ТР З7ПМ ЬО6П ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ Dlya CIHS Zh1TR Z7PM 'O6P JH'J DMC3 49FT C2ZA LI27 INNC
01.01.12	1639z	3756	Для ВТХ3 АГДТ ЬУ1Б ОСОГ БО6Ц Ф56Щ 9ГСА ЖБЗУ 4РВЗ 3ВСЬ Dlya VTH3 AGDT 'U1B OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ 3VS'
02.01.12	0400z	3756	Для ДКЙ1 6И2Ж ЖД9В СЙ5Ц 62ББ 81БР М7КС ПМВ5 ЛЬГЙ ТЩЩС Dlya DKJ1 6I2Zh ZhD9V SJ5C 62BV 81BR M7KS PMV5 L'GJ TshchShchS
02.01.12	0710z	5448	Для ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З ТАЗ7 Dlya VKY1 HCLF 61HZh ZBIL L7O5 V'Z' NLCYe V2MZ SB7Z TAZ7
02.01.12	1746z	3756	Для ЬМСВ ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦПЗЬ ЩТЗО ЦИХС Ж1ТР Dlya 'MSV YGJ' 12CI 79AJ P'HShch 6YeHB CP3' ShchT3O CIHS Zh1TR
03.01.12	0306z	3756	Для З7ПМ ЬО6П ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ Dlya Z7PM 'O6P JH'J DMC3 49FT C2ZA LI27 INNC ShchGJP 8CShchJ
03.01.12	1639z	3756	Для ЬУ1Б ОСОГ БО6Ц Ф56Щ 9ГСА ЖВЗА 4РВЗ 3ВСЬ ДКЙ1 6И2Ж Dlya 'U1B OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ 3VS' DKJ1 6I2Zh
04.01.12	0406z	3756	Для ЖД9В СЙ5Ц 62ББ 81БР М7КС ПМВ5 ЛЬГЙ ТЩЩС ВКЫ1 ХЦЛФ Dlya ZhD9V SJ5C 62BV 81BR M7KS PMV5 L'GJ TShchShchS VKY1 HCLF
04.01.12	1136z	5448	Unreadable
04.01.12	1430z	3756	Для 8МУО ТУЗР 5Й7Щ 27ЩЬ Н1ДУ 53ОБ 78МВ А3ПС ЬМСВ ЫГЙЬ Dlya 8MUO TUZR 5J7Shch 27Shch' N1DU 53OB 78MV A3PS 'MSV YGJ'
04.01.12	1744z	3756	Для 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦПЗЬ ЩТЗО ЦИХС Ж1ТР З7ПМ ЬО6П Dlya 12CI 79AJ P'HShch 6YeHB CP3' ShchT3O CIHS Zh1TR Z7PM 'O6P
05.01.12	0453z	5448	Для ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ ФЫ5Е Dlya JH'J DMC3 49FT C2ZA LI27 INNC ShchGJP 8CShchJ TZLM FY5Ye
05.01.12	0601z	5448	Для Ф61Н 37ЦН МУДР 7ВНЩ Ж7НЖ ЫМА5 ВТХ3 АГДТ ЬУ1Б ОСОГ Dlya F61N 37CN MUDR 7VNShch Zh7NZh YMA5 VTH3 AGDT 'U1B OSOG

05.01.12	1648z	3756	Для 62ББ 81БР М7КС ПМВ5 ЛЬГЙ ТЩЩС ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Dlya 62BV 81BR M7KS PMV5 L'GJ TshchShchS VKY1 HCLF 61HZh ZBIL
06.01.12	0353z	3756	Для Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З ТАЗ7 ПЫЦМ Ы8ВМ 8МУО ТУЗР 5Й7Щ Dlya L7O5 V'Z' NLCYe V2MZ SB7Z TAZ7 PYCM Y8VM 8MUO TUZR 5J7Shch
06.01.12	0909z	5448	Unreadable
06.01.12	1243z	5448	Для 6ЕХБ ЦПЗЬ ЩТЗО ЦИХС Ж1ТР З7ПМ ЬО6П ЙХЬЙ ДМЦ3 49ФТ Dlya 6YeHB CP3' ShchT3O CIHS Zh1TR Z7PM 'O6P JH'J DMC3 49FT
06.01.12	1716z	3756	Для Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ ФЫ5Е Ф61Н 37ЦН МУДР Dlya C2ZA LI27 INNC ShchGJP 8CShchJ TZLM FY5Ye F61N 37CN MUDR
07.01.12	0343z	3756	Для 7ВНЩ Ж7НЖ ЫМА5 ВТХ3 АГДТ ЬУ1Б ОСОГ БО6С Ф56Щ 9ГСА Dlya 7VNShch Zh7NZh YMA5 VTH3 AGDT 'U1B OSOG BO6C F56Shch 9GSA
07.01.12	0655z	5448	Для ЖБЗУ 4РВЗ 3ВСЬ ДКЙ1 6И2Ж ЖД9В СЙ5Ц 62ББ 81БР М7КС Dlya ZhBZU 4RVZ 3VS' DKJ1 6I2Zh ZhD9V SJ5C 62BV 81BR M7KS
07.01.12	1709z	3756	Для В2МЗ СБ7З ТАЗ7 ПЫЦМ Ы8ВМ 8МУО ТУЗР 5Й7Щ 27ЩЬ Н1ДУ Dlya V2MZ SB7Z TAZ7 PYCM Y8VM 8MUO TUZR 5J7Shch 27Shch' N1DU
08.01.12	0417z	3756	Для 53ОБ 78МВ А3ПС ЬМСВ ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦПЗЬ Dlya 53OB 78MV A3PS 'MSV YGJ' 12CI 79AJ P'HShch 6YeHB CP3'
08.01.12	1734z	3756	Для ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ ФЫ5Е Ф61Н 37ЦН МУДР 7ВНЩ Ж7НЖ Dlya INNC ShchGJP 8CShchJ TZLM FY5Ye F61N 37CN MUDR 7VNShch Zh7NZh
08.01.12	1920z	3756	Для ЫМА5 ВТХ3 АГДТ ЬУ1Б ОСОГ БО6С Ф56Щ 9ГСА ЖБЗУ 4РВЗ Dlya YMA5 VTH3 AGDT 'U1B OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ
09.01.12	0556z	5448	Для 3ВСЬ ДКЙ1 6И2Ж ЖД9В СЙ5Ц 62ББ 81БР М7КС ПМВ5 ЛЬГЙ Dlya 3VS' DKJ1 6I2Zh ZhD9V SJ5C 62BV 81BR M7KS PMV5 L'GJ
09.01.12	1119z	5448	Для ТЩЩС ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З Dlya TshchShchS VKY1 HCLF 61HZh ZBIL L7O5 V'Z' NLCYe V2MZ SB7Z
09.01.12	1335z	3756	Для ТАЗ7 ПЫЦМ Ы8ВМ 8МУО ТУЗР 5Й7Щ 27ЩЬ Н1ДУ 53ОБ 78МВ Dlya TAZ7 PYCM Y8VM 8MUO TUZR 5J7Shch 27Shch' N1DU 53OB 78MV
10.01.12	0343z	3756	Для А3ПС ЬМСВ ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЬУЕ8 ЦПЗЬ ЩТЗО Dlya A3PS 'MSV YGJ' 12CI 79AJ P'HShch 6YeHB CP3' ShchT3O CIHS
10.01.12	0737z	5448	Unreadable
10.01.12	1236z	5448	Unreadable
10.01.12	1734z	3756	Для АГДТ ЬУ1Б ОСОГ БО6Ц Ф56Щ 9ГСА ЖВЗА 4РВЗ 3ВСЬ ДКЙ1 Dlya AGDT 'U1B OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ 3VS' DKJ1
11.01.12	0358z	3756	Для 6И2Ж ЖД9В СЙ5Ц 62ББ 81БР М7КС ПМВ5 ЛЬГЙ ТЩЩС ВКЫ1 Dlya 6I2Zh ZhD9V SJ5C 62BV 81BR M7KS PMV5 L'GJ TshchShchS VKY1

11.01.12	1525z	3756	Для Ы8ВМ 8МУО ТУЗР 5Й7Щ 27ЩЬ Н1ДУ 53ОБ 78МВ А3ПС ЬМСВ Dlya Y8VM 8MUO TUZR 5J7Shch 27Shch' N1DU 53OB 78MV A3PS 'MSV
11.01.12	1752z	3756	Для ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦП3Ь ЩТ3О ЦИХС М1СЕ З7ПМ Dlya YGJ' 12CI 79AJ P'HShch 6YeHB CP3' ShchT3O CIHS Zh1TR Z7PM
12.01.12	0356z	3756	Для ЬО6П ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ Dlya 'O6P JH'J DMC3 49FT C2ZA LI27 INNC ShchGJP 8CShchJ TZLM
12.01.12	0722z	5448	Unreadable
12.01.12	1647z	3756	Для ОСОГ БО6С Ф56Щ 9ГСА ЖБЗУ 4РВЗ 3ВСЬ ДКЙ1 6И2Ж ЖД9В Dlya OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ 3VS' DKJ1 6I2Zh ZhD9V
12.01.12	1750z	3756	Для СЙ5Ц 62ББ 81БР М7КС ПМВ5 ЛЬГЙ ТЩЩС ВКЫ1 ХЦЛФ 61ХЖ Dlya SJ5C 62BV 81BR M7KS PMV5 L'GJ TShchShchS VKY1 HCLF 61HZh
13.01.12	0648z	5448	Для ТУЗР 5Й7Щ 27ЩЬ Н1ДУ 53ОБ 78МВ А3ПС ЬМСВ ЫГЙЬ 12СИ Dlya TUZR 5J7Shch 27Shch' N1DU 53OB 78MV A3PS 'MSV YGJ' 12CI
13.01.12	1704z	3756	Для ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ ФЫ5Е Ф61Н Dlya DMC3 49FT C2ZA LI27 INNC ShchGJP 8CShchJ TZLM FY5Ye F61N
14.01.12	0401z	3756	Для 37ЦН МУДР 7ВНЩ Ж7НЖ ЫМА5 ВТХ3 АГДТ ЬУ1Б ОСОГ БО6С Dlya 37CN MUDR 7VNShch Zh7NZh YMA5 VTH3 AGDT 'U1B OSOG BO6C
14.01.12	1458z	3756	Для 81БР М7КС ПМВ5 ЛЬГЙ ТЩЩС ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Л7О5 Dlya 81BR M7KS PMV5 L'GJ TShchShchS VKY1 HCLF 61HZh ZBIL L7O5
14.01.12	1918z	3756	Для ВЬЗЬ НЛЦЕ В2МЗ СБ7З ТАЗ7 ПЫЦМ Ы8ВМ 8МУО ТУЗР 5Й7Щ Dlya V'Z' NLCYe V2MZ SB7Z TAZ7 PYCM Y8VM 8MUO TUZR 5J7Shch
15.01.12	0414z	3756	Для 27ЩЬ Н1ДУ 53ОБ 78МВ А3ПС ЬМСВ ЫГЙЬ 12СИ 79АЙ ПЬХЩ Dlya 27Shch' N1DU 53OB 78MV A3PS 'MSV YGJ' 12CI 79AJ P'HShch
16.01.12	0408z	3756	Для ЖБЗУ 4РВЗ 3ВСЬ ДКЙ1 6И2Ж ЖД9В СЙ5Ц 62ББ 81БР М7КС Dlya ZhBZU 4RVZ 3VS' DKJ1 6I2Zh ZhD9V SJ5C 62BV 81BR M7KS
16.01.12	0816z	5448	Unreadable
16.01.12	1733z	3756	Для 53ОБ 78МВ А3ПС ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦП3Ь ЬМСВ Dlya 53OB 78MV A3PS YGJ' 12CI 79AJ P'HShch 6YeHB CP3' 'MSV
17.01.12	0328z	3756	Для ЩТ3О ЦИХС Ж1ТР З7ПМ ЬО6П ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 Dlya ShchT3O CIHS Zh1TR Z7PM 'O6P JH'J DMC3 49FT C2ZA LI27
17.01.12	0609z	5448	Для ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ ФЫ5Е Ф61Н 37ЦН МУДР 7ВНЩ Ж7НЖ Dlya INNC ShchGJP 8CShchJ TZLM FY5Ye F61N 37CN MUDR 7VNShch Zh7NZh
17.01.12	1252z	5448	Для ЫМА5 ВТХ3 АГДТ ЬУ1Б ОСОГ БО6С Ф56Щ 9ГСА ЖБЗУ 4РВЗ Dlya YMA5 VTH3 AGDT 'U1B OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ
17.01.12	1737z	3756	Для 3ВСЬ ДКЙ1 6И2Ж ЖД9В СЙ5Ц 62ББ 81БР М7КС ПМВ5 ЛЬГЙ Dlya 3VS' DKJ1 6I2Zh ZhD9V SJ5C 62BV 81BR M7KS PMV5 L'GJ

18.01.12	0436z	5448	Для ТЩЩС ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З Dlya TshchShchS VKY1 HCLF 61HZh ZBIL L7O5 V'Z' NLCYe V2MZ SB7Z
18.01.12	1644z	3756	Для А3ПС ЬМСВ ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦП3Ь ЩТ3О ЦИХС Dlya A3PS 'MSV YGJ' 12CI 79AJ P'HShch 6YeHB CP3' ShchT3O CIHS
19.01.12	0416z	3756	Для Ж1ТР З7ПМ ЬО6П ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ ЩГЙП Dlya Zh1TR Z7PM 'O6P JH'J DMC3 49FT C2ZA LI27 INNC ShchGJP
19.01.12	1705z	3756	Для АГДТ ЬУ1Б ОСОГ БО6Ц Ф56Щ 9ГСА ЖВЗА 4РВЗ 3ВСЬ ДКЙ1 Dlya AGDT 'U1B OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ 3VS' DKJ1
19.01.12	1748z	3756	Для 6И2Ж ЖД9В СЙ5Ц 62ББ 81БР М7КС ПМВ5 ЛЬГЙ ТЩЩС ВКЫ1 Dlya 6I2Zh ZhD9V SJ5C 62BV 81BR M7KS PMV5 L'GJ TshchShchS VKY1
20.01.12	0301z	3756	Для ХЦЛФ 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З ТАЗ7 ПЫЦМ Dlya HCLF 61HZh ZBIL L7O5 V'Z' NLCYe V2MZ SB7Z TAZ7 PYCM
20.01.12	1854z	3756	Для ЬО6П ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ Dlya 'O6P JH'J DMC3 49FT C2ZA LI27 INNC ShchGJP 8CShchJ TZLM
21.01.12	0329z	3756	Для ФЫ5Е Ф61Н 37ЦН МУДР 7ВНЩ Ж7НЖ ЫМА5 ВТХ3 АГДТ ЬУ1Б Dlya FY5Ye F61N 37CN MUDR 7VNShch Zh7NZh YMA5 VTH3 AGDT 'U1B
21.01.12	0604z	5448	Для ОСОГ БО6Ц Ф56Щ 9ГСА ЖВЗА 4РВЗ 3ВСЬ ДКЙ1 6И2Ж ЖД9В Dlya OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ 3VS' DKJ1 6I2Zh ZhD9V
21.01.12	1817z	3756	Для ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З ТАЗ7 ПЫЦМ Ы8ВМ 8МУО Dlya ZBIL L7O5 V'Z' NLCYe V2MZ SB7Z TAZ7 PYCM Y8VM 8MUO
22.01.12	0405z	3756	Для ТУЗР 5Й7Щ 27ЩЬ Н1ДУ 53ОБ 78МВ А3ПС ЬМСВ ЫГЙЬ 12СИ Dlya TUZR 5J7Shch 27Shch' N1DU 53OB 78MV A3PS 'MSV YGJ' 12CI
22.01.12	2027z	3756	Для 37ЦН МУДР 7ВНЩ Ж7НЖ ЫМА5 ВТХ3 АГДТ ЬУ1Б ОСОГ БО6С Dlya 37CN MUDR 7VNShch Zh7NZh YMA5 VTH3 AGDT 'U1B OSOG BO6C
23.01.12	0450z	5448	Для Ф56Щ 9ГСА ЖБЗУ 4РВЗ 3ВСЬ ДКЙ1 6И2Ж ЖД9В СЙ5Ц 62ББ Dlya F56Shch 9GSA ZhBZU 4RVZ 3VS' DKJ1 6I2Zh ZhD9V SJ5C 62BV
23.01.12	1706z	3756	Для 27ЩЬ Н1ДУ 53ОБ 78МВ А3ПС ЬМСВ ЫГЙЬ 12СИ 79АЙ А3ПС Dlya 27Shch' N1DU 53OB 78MV A3PS 'MSV YGJ' 12CI 79AJ A3PS
24.01.12	0424z	3756	Для 6ЕХБ ЦП3Ь ЩТ3О ЦИХС Ж1ТР З7ПМ ЬО6П ЙХЬЙ ДМЦ3 49ФТ Dlya 6YeHB CP3' ShchT3O CIHS Zh1TR Z7PM 'O6P JH'J DMC3 49FT
24.01.12	0648z	5448	Для Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ ФЫ5Е Ф61Н 37ЦН МУДР Dlya C2ZA LI27 INNC ShchGJP 8CShchJ TZLM FY5Ye F61N 37CN MUDR
24.01.12	1458z	3756	Для 7ВНЩ Ж7НЖ ЫМА5 ВТХ3 АГДТ ЬУ1Б ОСОГ БО6С Ф56Щ 9ГСА Dlya 7VNShch Zh7NZh YMA5 VTH3 AGDT 'U1B OSOG BO6C F56Shch 9GSA
24.01.12	1725z	3756	Для ЖБЗУ 4РВЗ 3ВСЬ ДКЙ1 6И2Ж ЖД9В СЙ5Ц 62ББ 81БР М7КС Dlya ZhBZU 4RVZ 3VS' DKJ1 6I2Zh ZhD9V SJ5C 62BV 81BR M7KS
25.01.12	0500z	5448	Для ПМВ5 ЛЬГЙ ТЩЩС ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ Dlya PMV5 L'GJ TshchShchS VKY1 HCLF 61HZh ZBIL L7O5 V'Z' NLCYe

25.01.12	0747z	5448	Для В2МЗ СБ7З ТАЗ7 ПЫЦМ Ы8ВМ 8МУО ТУЗР 5Й7Щ 27ЩЬ Н1ДУ Dlya V2MZ SB7Z TAZ7 PYCM Y8VM 8MUO TUZR 5J7Shch 27Shch' N1DU
25.01.12	1734z	3756	Для ЩТ3О ЦИХС Ж1ТР З7ПМ ЬО6П ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 Dlya ShchT3O CIHS Zh1TR Z7PM 'O6P JH'J DMC3 49FT C2ZA LI27
26.01.12	0448z	5448	Для ИННЦ ЩГЙП 8ЦЩЙ ТЗЛМ ФЫ5Е Ф61Н 37ЦН МУДР 7ВНЩ Ж7НЖ Dlya INNC ShchGJP 8CShchJ TZLM FY5Ye F61N 37CN MUDR 7VNShch Zh7NZh
27.01.12	0442z	5448	Для ЛЬГЙ ТЩЩС ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ Dlya L'GJ TshchShchS VKY1 HCLF 61HZh ZBIL L7O5 V'Z' NLCYe V2MZ
27.01.12	1336z	5448	Unreadable
27.01.12	1607z	3756	Для 78МВ А3ПС ЬМСВ ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦП3Ь ЩТ3О Dlya 78MV A3PS 'MSV YGJ' 12CI 79AJ P'HShch 6YeHB CP3' ShchT3O
28.01.12	0348z	3756	Для ЩГЙП 8ЦЩЙ ТЗЛМ ФЫ5Е Ф61Н 37ЦН МУДР 7ВНЩ Ж7НЖ ЫМА5 Dlya ShchGJP 8CShchJ TZLM FY5Ye F61N 37CN MUDR 7VNShch Zh7NZh YMA5
28.01.12	1732z	3756	Для ВКЫ1 ХЦЛФ 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З ТАЗ7 Dlya VKY1 HCLF 61HZh ZBIL L7O5 V'Z' NLCYe V2MZ SB7Z TAZ7
29.01.12	0417z	3756	Для ПЫЦМ Ы8ВМ 8МУО ТУЗР 5Й7Щ 27ЩЬ Н1ДУ 53ОБ 78МВ А3ПС Dlya PYCM Y8VM 8MUO TUZR 5J7Shch 27Shch' N1DU 53OB 78MV A3PS
29.01.12	0656z	5448	Для ЬМСВ ЫГЙЬ 12СИ 79АЙ ПЬХЩ 6ЕХБ ЦП3Ь ЩТ3О ЦИХС Ж1ТР Dlya 'MSV YGJ' 12CI 79AJ P'HShch 6YeHB CP3' ShchT3O CIHS Zh1TR
29.01.12	1435z	3756	Для З7ПМ ЬО6П ЙХЬЙ ДМЦ3 49ФТ Ц2ЗА ЛИ27 ИННЦ ЩГЙП 8ЦЩЙ Dlya Z7PM 'O6P JH'J DMC3 49FT C2ZA LI27 INNC ShchGJP 8CShchJ
30.01.12	0417z	3756	Для ЬУ1Б ОСОГ БО6Ц Ф56Щ 9ГСА ЖВЗА 4РВЗ 3ВСЬ ДКЙ1 6И2Ж Dlya 'U1B OSOG BO6C F56Shch 9GSA ZhBZU 4RVZ 3VS' DKJ1 6I2Zh
30.01.12	1630z	3756	Для 61ХЖ ЗБИЛ Л7О5 ВЬЗЬ НЛЦЕ В2МЗ СБ7З ТАЗ7 ПЫЦМ Ы8ВМ Dlya 61HZh ZBIL L7O5 V'Z' NLCYe V2MZ SB7Z TAZ7 PYCM Y8VM
31.01.12	0345z	3756	Для 8МУО ТУЗР 5Й7Щ 27ЩЬ Н1ДУ 53ОБ 78МВ А3ПС ЬМСВ ЫГЙЬ Dlya 8MUO TUZR 5J7Shch 27Shch' N1DU 53OB 78MV A3PS 'MSV YGJ'
31.01.12	1812z	3756	Для Ф61Н 37ЦН МУДР 7ВНЩ Ж7НЖ ЫМА5 ВТХ3 АГДТ ЬУ1Б ОСОГ Dlya F61N 37CN MUDR 7VNShch Zh7NZh YMA5 VTH3 AGDT 'U1B OSOG